

E. Chase 120
9-27-99

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

23/Brief

IN RE APPLICATION OF : Michael J. Sullivan
FOR : **IMPROVED MULTI-LAYER GOLF BALL**
SERIAL NO. : 08/870,585
FILED : June 6, 1997
EXAMINER : M. Graham
GROUP ART UNIT : 3711
LAST OFFICE ACTION : December 21, 1988
ATTORNEY DOCKET NO. : SLD 2 035-3-3-1/
P-3724-2-F1



Cleveland, Ohio 44114-2518
September 20, 1999

APPEAL BRIEF UNDER 37 C.F.R. 1.192

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Appellant files herewith an Appeal Brief (submitted in triplicate) in connection with the above-identified application, wherein claims 1-6 were finally rejected in the Office Action of December 21, 1988. What follows is Appellant's Appeal Brief in accordance with 37 C.F.R. §1.192(a):

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I. REAL PARTY IN INTEREST (37 C.F.R. § 1.192(c)(1))

The real parties in interest in this appeal are the inventor named in the caption of this brief (Michael J. Sullivan) and his assignee, Spalding Sports Worldwide, Inc. (formerly Lisco, Inc.)

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 1.192(c)(2))

Commonly owned application serial no. 08/920,070 is currently on appeal. As the present application is subject to a non-statutory provisional double patenting rejection over copending serial no. 08/920,070, the decision in 08/920,070 may have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS (37 C.F.R. § 1.192(c)(3))

The status of the claims set forth after the Final Office Action mailed December 21, 1998 was, and is, as follows:

Allowed claims: none

Rejected claims: 1-6

The present appeal is directed specifically to claims 1-6.

IV. STATUS OF THE AMENDMENTS (37 C.F.R. § 1.192(c)(4))

In the Final Office Action of December 21, 1998, the Examiner rejected claims 1-6 under 35 U.S.C. §103(a) as being obvious over **Proudfit (U.S. Patent No. 5,314,187)**.

No amendments after final have been submitted.

V. SUMMARY OF INVENTION (37 C.F.R. § 1.192(c)(5))

The invention of this application is directed to improved multi-layer golf ball cover compositions and the resulting multi-layer golf balls produced thereby. The novel multi-layer golf balls of the invention include a first or inner layer or ply of a low acid (16 weight percent acid or less) ionomer or ionomer blend. A second or outer layer or ply is included in the multi-layered golf balls comprised of a comparatively softer, non-ionomeric thermoplastic or thermosetting elastomer such as polyurethane, a polyester elastomer or a polyesteramide. Preferably, the inner layer or ply includes a blend of low acid ionomers and has a Shore D hardness of 60 or more and the outer cover layer comprises a polyurethane and has a Shore D hardness of about 45. The multi-layer golf balls of the invention can be of standard or enlarged size.

It has been found that multi-layer golf balls having inner and outer cover layers exhibit higher C.O.R. values and have greater travel distance in comparison with balls made from a single cover layer. In addition, it has been found that use of an inner cover layer constructed of a blend of low acid (i.e., 16 weight percent acid or less) ionomer resins produces softer compression and higher spin rates than inner cover layers constructed of high acid ionomer resins. Furthermore, it has been discovered that use of a softer polyurethane outer layer adds to the desirable "feel" and high spin rate while maintaining respectable resiliency. The soft outer layer allows the cover to deform more during impact and increases the area of contact between the club face and the cover, thereby imparting more spin on the ball. **As a result, the soft polyurethane cover provides the ball with a balata-like feel and playability characteristics with improved distance and durability.**

Consequently, the overall combination of the inner low acid ionomer resin cover layer and the outer cover layer made from polyurethane elastomers and non-ionomeric

resins results in a standard size or oversized golf ball having *enhanced resilience* (improved travel distance) and *durability* (i.e. cut resistance, etc.) characteristics while maintaining and in many instances, improving the balls playability properties. Specifically, it has been found that the combination of a low acid ionomer blend inner cover layer with a soft, relatively low modulus ionomer, polyurethane based elastomer outer cover layer provides for good overall coefficient of restitution (i.e., enhanced resilience) while at the same time demonstrating improved compression and spin. The outer cover layer generally contributes to a more desirable feel and spin, particularly at lower swing speeds with highly lofted clubs such as half wedge shots.

VI. ISSUES (37 C.F.R. § 1.192(c)(6))

Whether claims 1-6 are obvious and unpatentable under 35 U.S.C. §103 (a) over **Proudfit (U.S. Patent No. 5,314,187)**.

VII. GROUPING OF CLAIMS (37 C.F.R. § 1.192(c)(7))

Claims 1-6 are directed to golf balls having a particular layered construction.

Appellant submits that claims 1-6 should not stand or fall together but should be reviewed in the following groups:

Group I: Claims 1-4

Group II: Claim 5

Group III: Claim 6

Independent claim 1 (along with claims 2-4 which depend therefrom), recites, in part, a golf ball comprising an inner cover layer which is a blend of two or more low acid ionomer resins each of which contain no more than 16% by weight of an alpha, beta-

unsaturated carboxylic acid. The inner cover layer has a Shore D hardness of 60 or more. An outer cover layer having a hardness of 64 or less is molded on the inner cover layer and is comprised of non-ionomeric thermoplastic and thermosetting elastomers.

Independent claim 5 requires, in addition to the limitations of claim 1, that the golf balls have an inner layer with a modulus value of from about 15,000 to about 70,000 psi and a cover formed from a polyurethane based material.

In independent claim 6, modulus values for both the inner cover and outer cover are provided along with a list of specific materials from which the outer covers are made from including polyester elastomers, polyesters, polyether polyurethane, and polyester amides.

Because independent claims 1, 5, and 6 recite features not required by each of the other independent claims, it is submitted that these claims should not stand or fall together.

VIII. ARGUMENTS (37 C.F.R. § 1.192(c)(8))

I. *The Examiner's rejection of claims 1-6 under 35 U.S.C. §103(a) as being obvious over Proudfit (U.S. Patent No. 5,314,187), is erroneous and must be reversed.*

The Examiner has rejected claims 1-6 under 35 U.S.C. §103(a) as being obvious over Proudfit (U.S. Patent No. 5,314,187). The basis for the rejection is as follows:

"Proudfit discloses the claimed invention with the exception of the particular Shore D hardness claimed. However, Proudfit discloses a hard inner cover and softer outer cover formed from materials such as those disclosed by the applicant. Obviously the exact hardness of the layers would have been up to the ordinarily skilled artisan depending on distance and feel considerations. Absent a showing of unexpected results, the particular parameters of Proudfit's ball, which is formed from

the same materials in the same fashion claimed by applicant, would have been obvious to one of ordinary skill in the art."

(Office Action of July 8, 1998, page 2).

Appellant is of the opinion that the Examiner has not addressed or has misinterpreted material limitations present in the claims. Specifically, with respect to the type of material used in the outer cover, the Examiner has failed to provide a teaching of the use of the particular comparatively softer non-ionomeric thermoplastic or thermosetting elastomers (claim 1) such as polyurethane (claim 5) or, polyesters, polyester elastomers, polyether polyurethane and polyester amides (claim 6).

More importantly, Appellant has submitted evidence in the form of a Declaration under 37 C.F.R. 1.131 (copy attached hereto as Attachment A) in a related application (U.S. Serial No. 08/926,246) which removes Proudfit ('187) patent as prior art by antedating the Proudfit ('187) patent. This Declaration has been held by the Examiner in the copending 08/926,246 application (who is the same Examiner in the present application) to be effective for antedating Proudfit ('187). Moreover, in an interview conducted on April 9, 1999, the Examiner indicated that such a Declaration, even though not timely in the present application, would be entered if it was found persuasive in the copending 08/926,246 application (see Interview Summary Record of April 9, 1999).

Even though Proudfit ('187) would not qualify as prior art upon submission of a similar Declaration under 37 C.F.R. §1.131 in the present application, Appellant also believes that Proudfit ('187) would have failed to render the claimed invention obvious to one of ordinary skill in the art at the time the instant invention was made.

The Prior Art

Proudfit teaches a two layer cover for a golf ball. The two layer cover comprises an inner layer which is molded over a solid or wound core and an outer layer which is molded over the inner layer. The inner layer is formed from a relatively hard, cut-resistant material such as ionomer resin, and the outer layer is formed from relatively soft material such as elastomeric or polymeric material selected from the class consisting of natural balata, synthetic balata, natural rubber, polybutadiene, and polyoctenylene rubber.

**The Claimed Invention Distinguishes Patentability
and Unobviously Over the Cited Art**

The present invention, as claimed, requires an outer cover which is comprised of a relatively soft (compared to the inner cover) polymeric material selected from non-ionomeric thermoplastic and thermosetting elastomers (claim 1) polyurethane elastomer (claim 5) or polyester elastomers, polyesters, polyester polyurethane or polyester amides (claim 6).

Applicant respectfully submits that Proudfit fails to teach or suggest the claim designated outer cover compositions of the present invention.

Specifically, Proudfit, while disclosing a two layer cover comprising a relatively hard inner cover and relatively softer outer cover, fails to recognize the undesirable properties of a balata containing outer cover. As specifically set forth in the specification at page 2 of the specification:

"Despite all the benefits of balata, balata covered golf balls are easily cut and/or damaged if mis-hit. Golf balls produced with balata or balata-containing cover compositions therefore have a relatively short lifespan."

The present invention, utilizes the claim designated multi-layer cover which has an outer cover comprising non-ionomeric thermoplastic and thermosetting elastomers, such as polyurethane elastomers. Thus the present invention avoids the cut and abrasion propensities of balata while retaining the spin and feel characteristics of balata through the use of the claimed multi-layer structure.

Although the Examiner, in the Final rejection of December 21, 1998, has indicated that Proudfit does disclose outer cover layers of elastomers, including several thermoplastic or thermosetting non-ionomeric polymeric elastomers, Appellants submit that Proudfit fails to recognize the advantages of the combination of a low-acid ionomeric blend for the inner layer with the specifically claimed outer cover layer, wherein each of the outer layer and inner layer have claim specified Shore D hardness values (and in claims 5 and 6, specific modulus values). The Examiner readily admits that Proudfit fails to disclose the particular Shore D hardness values. In addition, the Appellant has shown unexpected properties form the claimed golf balls as set forth below.

As can be seen in Table 9 of the instant application (page 46), spin rates of the golf balls according to the present invention having softer polyurethane elastomer outer covers and harder inner covers (ball No.'s 23-25) are as high as, if not better than, comparable golf balls having Z-balata and/or soft ionomer resin covers and the same harder inner covers. However, as can be seen from Table 9, scuff resistance is better for the golf balls according to the present invention (scuff values of 1.5 for balls 23-25) compared to the Z-balata covered balls which have scuff values of 3 (for samples 27-29). This advantage is not taught nor suggested by the prior art.

In summary, the present invention relates to a multi-layer golf ball which has a hard, low acid, inner layer and a relatively soft, non-ionomeric elastomer such as a polyurethane, a polyester elastomer or by a polyester amide outer layer. As more particularly indicated in Example 4, use of non-ionomeric elastomers (Formulations 23-25) to produce the outer cover layer, results in molded golf balls having softer compression, improved durability, higher spin, with similar COR values to that of balata covered golf balls. The data indicates that a very good multi-layer ball having enhanced durability can be made using non-ionomeric elastomers (i.e., polyurethane, etc.) as the material for the outer cover layers.

Consequently, the applicant respectfully submits that the golf balls according to the claimed invention are not obvious variants of the Proudfit balls as Proudfit does not recognize or provide motivation for the unexpected enhanced durability of the claimed balls while retaining desirable balata-like properties.

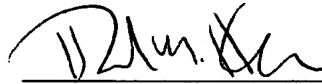
The Provisional Rejections

Upon allowance of claims 1-6, Applicant will submit one or more terminal disclosures as may be necessary in the two copending applications cited by the Examiner - U.S. Serial Nos. 08/920,070 and 08/926,246. At this time, no claims have been allowed in any copending application.

Accordingly, it is respectfully requested that the Examiner's rejections be reversed.

Respectfully submitted,

FAY, SHARPE, FAGAN,
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IX. APPENDIX OF CLAIMS (37 C.F.R. § 1.192 (c)(9))

1. A golf ball comprising:

a core;

an inner cover layer having a Shore D hardness of 60 or more molded on said core, the inner cover layer comprising a blend of two or more low acid ionomer resins containing no more than 16% by weight of an alpha, beta-unsaturated carboxylic acid; and

an outer cover layer having a Shore D hardness of 64 or less molded on said inner cover layer, said outer cover layer comprising a relatively soft polymeric material selected from the group consisting of non-ionomeric thermoplastic and thermosetting elastomers.

2. A golf ball according to claim 1, wherein the inner cover layer has a thickness of about 0.100 to about 0.010 inches and the outer cover layer has a thickness of about 0.010 to about 0.70 inches, the golf ball having the properties required by the U.S.G.A. and having an overall diameter of 1.680 inches or more.

3. A golf ball according to claim 1, wherein the inner cover layer has a thickness of about 0.050 inches and the outer cover layer has a thickness of about 0.055 inches, the golf ball having the properties required by the U.S.G.A. and having an overall diameter of 1.680 inches or more.

4. A golf ball according to claim 1 wherein the outer layer comprises a polyurethane based material.

5. A multi-layer golf ball comprising:

a spherical core;

an inner cover layer having Shore D hardness of about 60 or more molded over said spherical core, said inner cover layer comprising an ionomeric resin including no more than 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer having a Shore D hardness of about 64 or less molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising polyurethane based material.

6. A multi-layer golf ball comprising:

a spherical core;

an inner cover layer molded over said spherical core to form a spherical intermediate ball, said inner cover layer comprising an ionomeric resin having no more than 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric elastomer selected from the group consisting of polyester elastomer, polyester, polyether polyurethane and polyester amide, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application : Michael J. Sullivan
For : **IMPROVED MULTI-LAYER GOLF BALL**
Serial No. : 08/926,246
Filed : September 5, 1996
Examiner : M. Graham
Art Unit : 3711
Last Office Action : June 10, 1999
Attorney Docket No. : SLD 2 035-1-2-2



COPY

Cleveland, Ohio 44114-2518

DECLARATION UNDER 37 C.F.R. §1.131

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

As a person signing below:

1. I, Michael J. Sullivan, do hereby declare and say that I am an inventor in the above-identified United States patent application, which Office Action has rejected the claims in said application over U.S. Patent No. 5,314,187 to Proudfit, filed on June 29, 1992 and issued on May 24, 1994.

2. I have read and am familiar with the above Office Action rejecting the claims of the present application. I have further read and am familiar with the Proudfit patent (U.S. 5,314,187) over which said above applicant's claims were rejected.

3. I declare that at a date prior to June 29, 1992, the effective filing date for the subject matter of Proudfit relied upon by the Examiner in the outstanding Office Action, the invention disclosed in the present application was completed in this country. In this regard, I have attached hereto copies of data reproduced from my Laboratory notes (dates

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omitted), and other technical data material which establishes the completion of the invention prior to June 29, 1992. As can be seen from the attached data, Table 1 (Exhibit 1) corresponds to Table 7 of the present application and Table 2 (Exhibit 2) corresponds to data present in Table 8 of the present application. I hereby declare that the attached evidentiary materials were prepared prior to June 29, 1992.

4. Specifically, Table 1 attached hereto represents various inner cover layer blends used in preparing golf balls according to the present application. The blends shown in Table 1 for inner cover layers correspond to the blends for inner cover layers of Table 7 in the present application in the following manner.

<u>Attached Table 1</u> <u>Reference No.</u>	<u>U.S. 08/926,246</u> <u>Corresponding Table 7</u> <u>Reference Letter</u>
61-1	A
61-2	B
61-3	C
61-4	D
61-5	E

5. Table 1 gives the composition and properties of balls that were molded using materials that form the inner layer of the multi-layer ball. That is, (in Table 1) 1.680" diameter balls were molded over 1.545" diameter cores, giving a cover having a wall thickness of about 0.0675". These balls included the high acid materials from Exxon (ex. 61-1), DuPont (ex. 61-3) as well as zinc stearate loaded high acid (ex.61-2), Surlyn 1605, now designated Surlyn 8940 (ex. 61-4) and a blend of Iotek 8000/7030 (ex. 61-5). The spin, COR, and other various properties are ultimately for comparison with the multi-layer balls according to the invention as shown in Table 2 (which corresponds to data in Table 8 of the present application).

6. The balls of Table 1 were then ground down to a size of 1.620" and covered with a "soft" outer layer to form the balls of Table 2.

7. Table 2 shows the resultant golf balls (1.680" diameter) using, as an outer layer, one of three materials, 1) a hard/soft ionomer blend according to the present application, 2) a polyurethane from B.F. Goodrich, and 3) Surlyn 9020 (previously designated Surlyn 1855).

8. The resultant balls depicted in Table 2 are represented in Table 8 of the present application as follows:

<u>U.S. 08/926,246</u>	
<u>Attached Table 2</u>	<u>Corresponding Table 8</u>
<u>Reference No.</u>	<u>Reference No.</u>
544-84-1	1
544-84-2	2
544-84-3	3
544-84-4	4
544-84-5	5

9. It is noted that the component designated as "core" type in table 2, using identifiers 61-1 through 61-5, correspond to the intermediate balls having those same reference numbers in Table 1. Likewise, Table 8 of the present application also utilizes the intermediate golf balls of Table 7, A-D, which correspond to the intermediate balls 61-1 through 61-4 of Table 1 attached hereto (as set forth above).

10. Each of the dates deleted from Exhibits 1 and 2 is prior to June 29, 1992.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true ; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Michael J. Sullivan Sept. 1, 1999
Michael J. Sullivan (Date)



Table 1

<u>544-</u>	<u>61-1</u>	<u>61-2</u>	<u>61-3</u>	<u>61-4</u>	<u>61-5</u>
Iotek EX-959	50	50	--	--	--
Iotek EX-960	50	50	--	--	--
Zinc Stearate	--	50	--	--	--
Surlyn 8162	--	--	75	--	--
Surlyn 8422	--	--	25	--	--
Surlyn 1605	--	--	--	100	--
Iotek 7030	--	--	--	--	--
Iotek 8000	--	--	--	--	50
					50
Compression	58	58	60	63	62
COR	.811	.810	.807	.793	.801
Shore C Hardness	98	98	97	96	96
Spin Rate (RPM)*	7,367	6,250	7,903	8,337	7,956
Cut Resistance	4-5	4-5	4-5	4-5	4-5

* Note: Test performed with a Tour Edition #9 iron and a club head speed of 105 fps.


Michael J. Sullivan

Table 2

544-84	-1	-2	-3	-4	-5
<u>"Core" Type</u>	<u>61-1</u>	<u>61-2</u>	<u>61-3</u>	<u>61-4</u>	<u>61-5</u>
Cover *	TE-90	TE-90	TE-90	TE-90	TE-90
Compression	63	63	69	70	62
COR	.784	.778	.780	.770	.779
Shore C Hardness	88	88	88	88	88
Spin (RPM)	8,825	8,854	8,814	8,990	8,844
Cut Resistance	3-4	3-4	3-4	3-4	3-4

544-84	-6	-7	-8
<u>"Core" Type</u>	<u>61-1</u>	<u>61-5</u>	<u>61-4</u>
Cover	PU	PU	9020
Compression	67	69	61
COR	.774	.772	.757
Shore C Hardness	74	73	89
Spin (RPM)	10,061	10,637	8,846
Cut Resistance	3-4	3-4	1-2

- * A) PU is B.F.Goodrich Polyester Polyurethane X-4517
 B) TE-90 is 22.7 wt-% Iotek 8000; 22.7 wt-% Iotek 7030;
 45.0 wt-% Iotek 7520; 9.6 wt-% White MB
 C) 9020 is Surlyn 9020

 Michael J. Sullivan